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‘Ethics and Technology: Intimate Strangers’

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ETHICS AND TECHNOLOGY: INTIMATE STRANGERS

Willem Jacobus Card. Eijk

Without any doubt, science and technology changed our world, our way of thinking and feeling, in short our culture most radically in the last two centuries. Industrialization from the end of the eighteenth-century implied the decline of a culture and a socioeconomic life that had existed and most gradually developed from the Middle Ages. Due to the invention and introduction of the steam machine the old guilds came to an end. These associations of craftsmen with their strong mutual ties, intensely meaningful for every day's life of whole families, their pride of their craftsmanship and their mutual care for another were substituted by the industrial proletariat with its lack of cohesion and its social misery in the nineteenth-century.

Subsequently, the industrial era had to yield its place to that of the information society due to the development of new technical means of communication, particularly television in the fifties and sixties of the last century. The information society, making sources of information which were accessible only to the elite, available for the masses and the rapid rise of prosperity partly due to new technologies from the early sixties enabled the individual to live and organize his life independently from fellow human beings to a large extent. This marked the start of the culture of expressive individualism and authenticity, which implies that the individual human being does not only have the right, but also the obligation to distinguish himself from others by his looks, his religion, his philosophy of life, his set of moral values. Again new technological developments led to a profound change of human culture.

Actual technological progress

And technical developments have not come at a standstill yet, but are going on and even at an ever higher speed in many diverse fields.

One of these developments concerns the digitalization of the world. Internet and the social media make a huge mass of information available on a small tablet and even a mobile phone, which required whole libraries in the not so far past. This only strengthened and deepened the culture of expressive individualism and authenticity. The digitalization of the world is an unstoppable and inconceivably rapid process with an unpredictable impact on our culture. Without any doubt, this process will bring us many advantages, though it is at the moment very uncertain which will be its possible collateral effects and risks. René Munnik, reflecting on the digitalization of the world, wonders what it will mean for our life and culture and also for Christian faith. We are passing at high speed from a lettered culture, in which information is communicated by the alphabet, having its expression in words, to a digitalized culture, in which information is communicated by algorithms, mathematic signs and functions. What will this imply for the communication of the Christian faith, which is mediated by the Word in the Holy Scripture and ultimately by the incarnated Word, Jesus Christ? Is it therefore not a necessity to develop a theology and anthropology of communication?[1]

Much is also speculated about the introduction of what is loosely termed 'robots'. These are already active in industries and financial administration, which does raise fear that they, by being cheaper, will oust employees and thus cause massive unemployment.[2] It is expected that in the not so far future we will drive in self-driving

[1] R. Munnik, 'De digitalisering van de wereld', *Collationes* 44 (2014), Nr. 1 (pp. 5-21).
[2] E. Bijlo. 'Robots ook in 2015 eng', in *Trouw*, 3 January 2015, Verdieping, pp. 2-3.

cars, be surrounded everywhere, at home and outside, by robots for housekeeping and other activities, intelligent furniture, clothes, vehicles, roads and materials with a high capacity to communicate with one another and with us. In this way, we will be able to manage a big number of devices at home and elsewhere. This is called ambient intelligence.

These devices will soon have their place in health care and probably home care, too. Due to the strong increase of the ageing population there are more elderly people in need of care and few younger people available for giving care. Moreover, due to a lack of financial means, society cannot afford to employ enough personnel. The solution for this problem could be robotisation of health and home care. A number of care activities could be performed by machines, led by advanced software. However, this technology, though most certainly solving a whole range of practical problems, does also raise doubts: would that not dehumanize health and home care? One could imagine an old lady receiving home care from robots, who rarely meets a living human person. In order to find an answer to this problem robotics, the science which deals with the theoretical and practical implications of robots, examines the possibilities to produce humanoids, robots resembling human persons.[3]

Even more intriguing are the tantalizing technologies which are already applied or will be so in the future in the human being himself. It is possible to connect devices by means of electrodes, placed in neural tissue, with neurons or neuronal networks. Many people suffering from deafness are able to hear again by way of a cochlear implant, which transmits sound waves to the auditory nerve. Research is done to connect a camera with the optic nerve by way of a neuro-implant in order to make blind people see something. Neuro-implants or neuro-prosthesis, placed deep in de brain, can transmit electric impulses targeted to special neuronal networks. This is called Deep Brain Stimulation. By this one

[3] D. Russo, 'Domotics and robotics', in *Dolentium Hominum* 29 (2014), nr. 1 (pp. 137-144).

succeeds in controlling the tremor of Parkinson's disease and suppressing obsessive compulsive actions. One explores whether this is also effective in epilepsy, depression, anorexia and addiction.

However, these neuro-implants may also change personality. This was observed, for instance, in a 62 years old man in whose brain a neuro-prosthesis was implanted because of Parkinson's disease. The therapy led to an improvement of his condition and locomotion and a diminishment of his tremor, but at the same time also to changes of his state of mind, euphoria and uncontrolled behavior. He, himself divorced, began a sexual relationship with a married woman and tried to sexually abuse nurses. He bought houses and cars he could not afford and suffered from megalomania without understanding his condition. By diminishing the tuning of the Deep Brain Stimulation the mania disappeared, but the Parkinson returned, which did not respond to other kinds of treatment. This situation presented to the physicians attending him a difficult choice. They could either offer him an adequate treatment of his Parkinson's disease, by which he could function physically well, but had to put up with a grave mania. Or they could forego the therapy with Deep Brain Stimulation, by which he would be psychically healthy but bedridden due to Parkinson.[4]

It is also possible to connect a computer to neuronal networks by a brain implant, called a Brain Computer Interface (BCI, here termed neuromotor prosthesis). In 2001 Matthew Nagle, 25 years old, got due to an attack with a knife a spinal cord lesion at the cervical level, which caused a quadriplegia, i.e. paralyses of both arms and both legs. A neuromotor prosthesis, consisting of 96 very fine electrodes, implanted in the motor part of the brain cortex in 2004, was able to 'read' his thoughts and to translate them into a signal

[4] A.F.G. Leentjens, V. Visser-van de Walle, Y. Temel, F.R.J. Verhey, 'Manipuleerbare wilsbekwaamheid: een ethisch probleem bij elektrostimulatie van de nucleus subthalamicus voor een ernstige ziekte van Parkinson', in *Nederlands Tijdschrift voor Geneeskunde* 148 (2004), nr. 28 (pp. 1394-1398).

transmitted to a computer. By thinking, Matthew was able to move a cursor on the screen to certain icons and click on them. In this way he could switch on the television, choose channels, check his e-mail and manage other devices in his house.[5]

The connection of the brains of human beings with a computer nourishes the discussion on cyborgs. With this one means people who have developed an intimate and sometimes even necessary relation with a machine or even a physical fusion of a human being and a machine.[6] Apart from the spectacular therapeutic successes, Brain Computer Interfaces could also be used for other ends. Could one use Brain Computer Interfaces to imitate or enforce, for instance, the function of the hippocampus, a structure at the inferior part of the brain, responsible for memory? Would it not be possible to transmit information directly to this part of the brain of people whose professional activities or even whose lives depend on the quick exchange of information, like stock traders and military personnel? These techniques would perhaps make it possible to connect the brains of soldiers with a communication center and with one another as to exchange information directly to their brains such that they could be mobilized in short a time. A report of the Developments, Concepts and Doctrine Centre of the British Defense Ministry, published in 2007, which presents a Global Strategic Trends Program from 2007 till 2036, foresees the "development of artificial sensors capable of interfacing with the human mind."[7] These applications go beyond therapy and aim at

[5] L.R. Hochberg, M.D. Serruya, et al., 'Neuronal ensemble control of prosthetic devices by a human with tetraplegia', in *Nature* (2006), pp. 164-171.

[6] *The Oxford English dictionary*, red. by J.A. Simpson, E.S.C. Weiner (Oxford: Oxford University Press, 1989), 2nd ed., IV, p. 188; the term was introduced by Manfred Clynes and Nathan Kline in 1960, see: Mamfred E. Clynes and N.S. Kline, 'Cyborgs and space', *Astronautics* (1960), pp. 26-27 and 74-75; reprinted in: *The Cyborg Handbook*, red. by Gray, Mentor, Figueroa-Sarriera (New York: Routledge, 1995), pp. 29-34.

[7] Developments, Concepts and Doctrine Centre of the British Defense Ministry, *The DCDC Global Strategic Trends Programme 2007-2036*, 2007 (3rd ed.), pp. 58 (see:

the improvement of the capacities of healthy beings. This is called enhancement.[8]

Another field in which new technologies may change the world and perhaps the human being as such, too, is that of molecular biology and synthetic biology. It concerns techniques for modifying DNA. This may be used in order to treat genetic diseases, but also for enhancement. Gene doping is an example of this: genes containing the code for the desired drugs can be transferred to the nuclei of cells of certain tissues of athletes. In this way the drugs to improve their achievements are produced inside their bodies. Once the modification of DNA especially in the germline will be possible, could researchers then construct new forms of life or even design human persons according to preference? Would that not lead to a modification of human nature as such or the creation of a new being with human biology as point of departure?

And what to think of artificial reproduction, which expanded the whole concept of parenthood far beyond the 'classical' one, we knew until a few decades ago? The newest development in reproduction concerns the cultivation of germ and egg cells from skin cells in mice. This implies the production of induced pluripotent stem cells from skin cells by transferring to their nuclei four genes in order to reprogram them. These stem cells can be triggered to become precursor cells of sperm and egg cells. In mice by applying in vitro fertilization it is possible to bring about live births with the thus produced sperm and egg cells. By injecting precursor cells of sperm cells from the own skin cells in the testis of a male who lost his sperm producing tissue by radiation therapy,

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http://webarchive.nationalarchives.gov.uk/20121026065214/http://www.mod.uk/NR/rdonlyres/5CB29DC4-9B4A-4DFD-B363-3282BE255CE7/0/strat_trends_23jan07.pdf).

[8] Cf. "M. Schermer, 'De geest en de Machine: Over de conceptuele en morele implicaties van brein-machine-interacties', in *Leven als Bouwpakket: Ethica verkennen van een nieuwe technologische golf*, red. by Tsj. Swierstra, M. Boenink, B. Walhout, R. van Est (Kampen: Klement, 2009).

one may perhaps enable him to beget children by normal sexual intercourse. However, it seems also possible, for instance, to produce by this method even egg cells from skin cells of a male. This would imply that a homosexual couple could have children of their own, at the moment only in theory though, because in practice there are still enormous hurdles to be taken, if one would like to realize that.[9]

Can ethics mean something for technology?

After this brief overview of actual and future new technologies it goes - I think- without saying that it is necessary to define our position towards applying them in practice, because they will shape our lives, society and culture with far-reaching consequences. We cannot stop them from being developed and applied, but by reflecting on them now, we might be able to steer their development and application in a positive way. For reasons, I will further explain hereafter, it is in the first place necessary that technicians themselves and subsequently policy makers and politicians define their stance. Can ethics in the meaning of a science of moral theory help them in reflecting on this issue? I hope to show that the answer is affirmative. However, the relationship between ethics and technology, described in the title of his conference as one between "intimate strangers," is not easy in every respect.

When I worked in one of the two hospitals of the University of Amsterdam by the end of the seventies, at a certain moment various questions rose concerning the application of life prolonging treatment: which were the criteria for discerning whether advanced life prolonging techniques should be applied or not in concrete cases? Some collaborators proposed to institute an ethical commission. This proposal was immediately shot to pieces

[9] Cf. the on-line article of the periodical *Nature* on this topic, D. Cyranoski, 'Rudimentary egg and sperm cells made from stem cells', 24 December 2014, see: http://www.nature.com/news/rudimentary-egg-and-sperm-cells-made-from-stem-cells-1.16636. In 2015 researchers succeeded in creating human sperm and egg cells in dish, starting from human skin cells

by the chef de clinique: "For Heaven's sake, no, because we will then get a moral theologian about the house." Apparently, ethicists and moral theologians are not extremely popular among people active in the field of technology. For this at least three reasons exist.

1. In the first place, ethics and moral theology as scholarly disciplines use other methods of reasoning than those used in technology, which is an applied positive science. Many currents in moral philosophy, especially in Christian ethics, and certainly moral theology take as point of departure knowledge that goes beyond the strictly empiric knowledge which is the starting point for positive sciences and technology. Therefore, technologists do not always easily understand the arguments of ethicists and moral theologians.

2. Secondly, technologists not rarely view ethicists and moral theologians as 'peepers', people looking over their shoulders, trying to put on the brakes by their objections against the application of new technologies. This often happens with regard to new biomedical technologies: robotisation in health care, neuro-implantations, artificial reproduction techniques for instance cloning by way of nuclear transplantation or DNA modification. In 1997 members of the International Academy of Humanism, declared themselves openly in favour of cloning of human beings in a statement. In this they warned of theological scruples:

> "The potential benefits of cloning may be so immense that it would be a tragedy if ancient theological scruples should lead to a Luddite rejection of cloning."[10]

[10] "Declaration in defence of cloning and the integrity of scientific research," *Free Inquiry* (1997), summer, pp. 11-12, quotation on p. 12. It concerns among others Francis Crick, one of the discoverers of the double helix structure of DNA in 1953, Simone Veil, former president of the European Parliament, and the Dutch anaesthesiologist Pieter Admiraal, an international advocate of euthanasia during the eighties.

The Luddites were English textile artisans who protested against the introduction of machines in textile industry from 1811 to 1817, because these took over their labor and made them unemployed. Ethicists and moral theologians are perceived as old-fashioned, easily scared people, blocking the development and application of new techniques, which would be in fact nothing else than a blessing for humanity in the eyes of technologists themselves.

3. The third problem technologists often have with ethicists and moral theologians, is that these would 'always' be too late. Nowadays, new techniques, after having been discovered, are mostly soon adopted in practice. Scarcely was the first baby, conceived by in vitro fertilization, born in 1978, when this artificial reproduction technique was widely applied over the whole world, whereas ethicists and moral theologians were still struggling to figure out its various ethical aspects. The Congregation for the doctrine of the faith published its instruction on artificial reproduction techniques, *Donum vitae*, not until 1987.[11] The complaint against ethicists and moral theologians is that they arrive at conclusions on new technological developments only when these are already used for years. This would make their judgments and opinions worthless.

These objections or complaints against ethicists and moral theologians explain something of the title of this conference "Ethics and technology: intimate strangers." Both are strangers for one another. But neither are they 'aliens' for one another, which the Tilburg School of Catholic Theology hastens to say by adding to the title that they - though strangers - are 'intimate'. Why? In order to save something of the relevance of a faculty of catholic theology for modern society? Maybe this was a hidden motive, but I would like to emphasize something more fundamental. Technology is

[11] Congregation for the Doctrine of the Faith, '*Instructio de observantia erga vitam humanam nascentem deque procreationis dignitate tuenda Donum vitae*', *AAS* 80 (1988), pp. 70-102.

applied by human beings. Therefore, applying technology is a free act. And a free act implies moral responsibility and thus has everything to do with ethics. Though a certain aversion to ethics may be observed among a number of technologists, developing and applying technology as a kind of free human action has the full interest of ethics, and rightly so. However, do technologists have the same interest from their part in ethics? In as far as they are strangers for one another, it is the primary duty of the ethicist or moral theologian as an expert in analyzing free action to render his discipline more accessible and comprehensible to the technologist. The ethicist who is most able to 'odd this little job' is the one who presented the first all-embracing ethical theory in history, i.e. Aristotle (384-322 BC).

'Making' versus 'doing'

In order to explain this let us return for the sake of argument to the old lady, who needs home care, which can however only be offered for economic reasons by completely robotizing her house, such that she is only taken care of by robots and no human persons need to be employed any more.

When are we allowed to qualify the robotisation of the old lady's house as a morally good act? Of course, some difficulties will occur in the beginning, especially with the software, the most essential and delicate aspect of modern technology, like we all experience now and then. In the beginning the lady will be taken out of bed at three o'clock in the night, instead of the so carefully programmed seven o'clock in the morning and put in a cold instead of a warm shower. Now, she should not complain too much because this concerns most software in the initial stage. But, let us say that after half a year till one year the software is correctly set and the robots perform their work flawlessly. Is she now finally satisfied? It goes without saying that the old lady will be glad to be taken out of bed at a humane time and to have warm showers.

However, does this mean that everything is now okay? In a certain sense yes and in a certain way no. It is the brilliant insight of Aristotle that in all human acts, so also in that concerning the application of technology, two levels must be distinguished from one another: 'making' and 'doing', in Greek terms 'poesis' (ποίησις) and 'praxis' (πραξις).[12] So far we only analyzed the robotisation from the point of view of 'making' or 'producing'. The evaluation whether making something is good, depends on the quality of the thing that was made, the product. At the moment that the software is functioning fine and the old lady is taken out of bed at reasonable times and undergoes showers of a bearable temperature, the product is good and therefore the act of developing and applying technology as such is good.

There is a strong tendency in our present society, impressed by what technology achieves, to stick only to this level of making. Doing so, we will confine ourselves to live as efficiently as possible. This also implies to do everything in the shortest time and in the cheapest way possible. Therefore, economics has a very strong and practically inescapable impact on the decisions of politicians and policy makers. By this we run the risk that our whole life will become for us "a means to live it out efficiently." Balaban, referring to the euthanasia discussion, wonders whether that would not also imply the goal "to die with the least effort and the shortest possible time."[13]

Can we conclude that the act of robotisation, because the 'product' is good, is to be qualified as a morally good act and praise the technician who realized this, and the politicians and policy makers who ordered it, as persons acting in a morally good way? I can imagine that after some time the old lady, surrounded by her robots,

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[12] Aristotle, *The Nicomachean Ethics*, transl. by H. Rackham (Cambridge/London: Harvard University Press/William Heinemann, 1982), Loeb Classical Library nr. 73, VI,III,IV-V, 1140 a-b; O. Balaban, '*Praxis* and *Poesis* in Aristotle's practical philosophy', in *The Journal of Value Inquiry* 24 (1990), pp. 185-198.

[13] Ibid., p. 189.

but meeting no living human being any more, will nonetheless, start to complain again, but not anymore about the technique, because the product has become irreprehensible. Though the product was good, one might at least hesitate to qualify the act of robotisation as totally good. For this act has still another level, which we overlooked in analyzing it only from the point of view of making. The old lady's well-being or happiness is at stake at a deeper level than when she was only lifted out of bed at an inconvenient time or being put under the cold shower. Humans are social beings and cannot do without contacts with fellow human beings and their love. And this problem cannot be solved by adjusting and improving her robots any further. Here we come upon a human aspect for which ambient technology and robotisation do not appear to be a solution. Even the best humanoid, however resembling a human person, will not be able to replace a living human being. The fact remains that human beings have a social nature and cannot do without human relationships. The absence of other human beings cannot be abridged by machines. By totally depriving the old lady of human contacts, one of her basic rights is violated. The act of producing, however perfect in itself from the perspective of making, failed in another way, namely by not being just. And the technician, however skillful he may be, cannot be qualified as a just person.

Here, we discover in this free act of developing and applying technology another level, namely that of 'doing' (praxein). Doing is here used in the sense of an intransitive verb and does not have a product outside the act itself, on the qualification of which depends the qualification of the act. In as far as fundamental rights are respected of realized by the act, one can speak of 'doing justly'. If they are violated, one should speak of 'acting unjustly'. This act, if morally right, actuates or perfects the acting person. It makes him a just man. It is not the product, the end of making, which is outside the acting person, but it is doing which has its end in itself: the just

act is performed because of itself, according to Aristotle: "Doing well is in itself the end."[14]

The robotisation of the old lady's house, though perfect from the perspective of making, implies violating her basic right to human relationships. It can therefore not be qualified as 'doing justly'. And doing justly by respecting and realizing basic human values is an end in itself, exactly because these values are ends in themselves. The criterion for evaluating the act from the perspective of making does not necessarily coincide with that of doing. Of course, this does not exclude that robotisation as such could be very welcome, but then at the condition that it is not employed to deprive people who need care, totally from human contacts.

The example per excellence to explain the difference of an analysis of the act from the perspective of doing and that of making is the perfect crime: well prepared and executed, it is perfect from the perspective of the result and thus from that of making, but remains ethically objectionable from the perspective of doing: however perfect the result, it remains 'doing unjustly'.

'Techne' versus 'practical wisdom' (prudence)

What has been said so far, concerns human action in general. Intriguing however for the relationship between technology and ethics is that Aristotle adds to the distinction between making and doing another parallel distinction, i.e. that between 'techne' (τέχνη) and 'practical wisdom' (phronesis/φρόνησις).[15] The term 'techne', from which our word 'technique' is derived, means craftsmanship. In Latin it is translated as 'ars', but it does here not only imply art in the contemporary meaning of the word. Techne is a kind of virtue which enables man to make something well, i.e. it has pretty much the same meaning as our word technique in the sense of an acquired skill to perform a certain activity in a structured way. The aim of techne or technique in this sense is the perfection of the product of

[14] Aristotle, *The Nicomachean Ethics*, op. cit., VI, IV,V,1140b 5.
[15] Ibid., 1140a-b.

the act and thus of 'making'. Techne does however not concern a moral evaluation. Whether robotisation helps to realize human values or violates them is indifferent for techne.

On the contrary, practical wisdom concerns the moral evaluation of the act. Practical wisdom is the virtue which enables the human being to realize himself as such, i.e. as a really humanly acting person, which is the same as a morally good acting person, by his free action under concrete circumstances. Practical wisdom aims at the perfection of human action from the perspective of doing, not from that of making.[16] It does therefore not concern the product of the human act. Practical wisdom is the virtue which enables practical reason, i.e. reason concerned with human acting under concrete circumstances, to recognize and apply the means proportionate to the end one intends to realize, also termed the golden mean, taking into account fundamental human values.[17] Returning to the old lady whose house is robotized: practical wisdom helps to see the right means between under-robotisation, by which she would not receive enough taken care, on the one hand and over-robotisation and dehumanisation of her conditions on the other. Both under-robotisation and over-robotisation would have harmed her rights and thus been unjust acts. Practical wisdom

[16] Thomas Aquinas, *Summa Theologiae*, I-II, 57, 5 ad 1: art concerns the *recta ratio factibilium*, whereas practical wisdom (*prudentia*) concerns the *recta ratio agibilium*.

[17] Cr. Aristotle, *The Nicomachean Ethics*, op. cit., II,VI, 1106b36-1107a2: "Virtue then is a settled disposition of the mind determining the choice of actions and emotions, consisting essentially in the observance of the mean, relative to us, this being determined by principle, that is, as the prudent (practically wise, WE) man would determine it." Aristotle here gives a summary of his concept of the mean in relation to virtue, as it would be seen not in the first place from the perspective of practical wisdom, but from that of the person who is practically wise. The famous example that Aristotle gives in order to explain the mean in relation to virtue is that of courage as a means between cowardice or lack of confidence and insensitive recklessness of overconfidence: ibid. III,VI-IX,1115a5-1117b22.

incorporates techne: robots have to function well and effectively, but practical wisdom goes further and considers basic human values as well. Therefore, practical wisdom is the way by which contemporary society can escape from the one-sided straitjacket of economic values which is caught for the last decades.

An obvious question is of course: which are the fundamental human values we should respect and realize? Does the new technological era not call for a renewed anthropology and new values and norms, with a view to its great impact on culture? For heaven's sake: no. In our being as it is created by God, the moral natural law is deeply rooted. The norms showing us the way to respect, protect or realize these values have already been formulated. The first universal fundamental principles of moral natural law cannot be proved but are - as Thomas Aquinas says – 'per se nota,'[18] or 'objectively evident'. The first type that belongs to this is that the good should be done and the evil should be avoided.[19] This looks like stating the obvious, but that is not so. The 'good' is no empty concept, because man can recognize by nature certain things as good in themselves, when his reason has matured and he has a certain experience. To these fundamental values belong, according to the analysis of the works of Thomas Aquinas by Finnis: life (procreation included), knowledge, play, esthetic experiences, sociability (friendship), practical reasonableness and religion. One may recognize other human values, but they can be reduced to the seven mentioned here.[20] These seven values are all equally fundamental: there is no hierarchy between them and the one cannot be sacrificed for the other. Anthropological research also under non-Western people showed that one may find these values notwithstanding all other differences in diverse cultures. Man knows these fundamental values by a spontaneous inclination to realize them. Difficulties to accept this explanation may rise when one forgets that it does not concern blind instincts as in the case of animals, but a conscious

[18] Thomas Aquinas, *Summa Theologiae*, Ibid., I-II, 94,1c ; 100,3c.
[19] Ibid., I-II, 94,1c.
[20] J. Finnis, *Natural law and natural rights* (Oxford: Clarendon Press, 1988), Clarendon Law Series, Chapter IV.

inclination toward which the human being can and must make a choice. The Ten Commandments (which belong to moral natural law except the third one concerning the sabbatical peace) are norms which prohibit the violation of basic human values.

Experts may observe that I avoid translating the Greek phronesis into 'prudence', as is more common. The reason is that prudence is often not understood in the way which Aristotle and the Christian Tradition until Thomas Aquinas used it, but as a kind of caution, a hesitation of fear to act or to intervene, or also the calculation of a tactician and self-interest. This is however not the case. Practical wisdom or prudence in the classical sense of the word may also imply a very rapid and decisive action or intervention. An orthopedic surgeon may act very prudently by not operating and applying conservative treatment in certain types of bone fractures, whereas acting equally in prudent way by operating immediately in an emergency case like that of a rupture of a brain artery. And practical wisdom is by no means directed at self-interest, but on respecting and realizing what is good in itself.[21] The translation of phronesis by practical wisdom may prevent a series of wrong interpretations.

The confusion that prudence is a quality of the tactician eager to slyly safeguard his own interest finds its source in the temptation we all know, to see as good what we want to be good. The point is that practical wisdom is at the borderline between ratio and will. It indicates something as a good which is in fact the object of the will. It here concerns however the good recognized as such by reason through prudence and then proposed to the will. This presupposes the sincere will to accept what is objectively good and not what is desired as good, but is not good in reality.[22]

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[21] Cf. J. Pieper, *Über die Tugenden. Klugheit, Gerechtigkeit, Taperferkeit, Mass* (München: Kösel, 2008), 2nd ed., p. 18.

[22] Thomas Aquinas, *Summa Theologiae* II-II,56, 3; J. Pieper, *Über die Tugenden*, op. cit., pp. 52-54.

Epilogue

For a final conclusion let us return to the provocative title of this lecture: ethics and technology, what are they: intimate strangers? The answer depends on what you mean by ethics.

In the first place, let me try to find an answer to this question, taking ethics in the sense of ethical science, represented by the ethicist and moral theologian. Are the technicians and the policy makers and the politicians, who draw the framework for applying technology, on the one hand and the ethicist and moral theologian on the other intimate strangers for one another? They do not need to be intimate with one another at all costs and whether they know each other very well, is not so important. The ethicist and moral theologian can explain the theory of ethics and analyze practical wisdom from the theoretical point of view. They may assist in analyzing difficult cases by indicating the basic human values and norms involved. Sometimes, this may be very easy. That the old lady should not be deprived from human relationships by robotizing her house is not so difficult to understand. A more complicated question, in which the advice of ethicists and moral theologians may be useful, is that of whether the urologist may restore fertility in a patient whose sperm producing tissue has been lost due to radiotherapy, by transplanting sperm stem cells derived from the patient's own skin, such that he may beget a child by sexual intercourse? Apart from the risks of this technology, one may question how it is to be evaluated from the point of view of the Church's doctrine on marriage and sexuality. Thus, I do most certainly not say that ethicists and moral theologians are completely useless. As a matter of fact, I am one of them. The emeritus professor of history and television phenomenon Maarten van Rossem said in an interview, asked after his vanity as scholar in history: "You have to be convinced that it makes some sense that you exist."[23] The expertise of ethicists and moral theologians in the field of ethical theory does however not imply that they have the virtue of practical wisdom

[23] L. Reijmer, "In een vorig leven Amerikadeskundige", in Volkskrant (2015), 4 februari, V 2-3.

themselves. Despite their theoretical knowledge of moral theology, they are not necessarily the best confessors, able to advise their confessants in concrete questions. After all, the chef de clinique, quoted above, though not having perhaps entirely positive motives, was not completely wrong by keeping away the moral theologian from his ward. Determining what proportionate treatment is in the circumstances of a concrete patient, is not to be done by the moral theologian with his theoretical knowledge, but by the medical doctor himself with his personal practical wisdom.

This brings me to ethics in its other sense, namely that of morals or the whole of ethical principles. Are ethics in this sense on the one hand and technology and especially its representatives, technicians, policy makers and politicians, on the other intimate strangers for one another? The answer is: they should be intimate and no strangers to one another. It is they who have to decide to develop or apply technology under the concrete circumstances and they should do that in a morally responsible way. These decisions cannot be made by the ethicist or moral theologians. The technicians, policy makers and politicians have to do that themselves on the basis of their practical wisdom, which incorporates their 'techne', their skillfulness, but goes beyond that, analyzing the application of technology also from the aspect of doing: i.e. wondering whether it is an act proportionate to respecting, protecting or realizing fundamental human values. Ethics should be no intimate stranger, but a most intimate and loved 'friend', so to say. The means for making ethics an intimate and loved friend is the virtue of practical wisdom. Ethics is then an inner moral characteristic of reason and will, leading technological developments and applications. By practical wisdom completed by the other virtues, the acting person is enabled to evaluate his decisions in complicated situations in the light of fundamental human values and norms "prompte, faciliter et delectabiliter,"[24] i.e. spontaneously, easy and with pleasure.

[24] This classical triad is derived from various texts of Thomas Aquinas: *Quaestiones de quolibet* IV, 10, 1c; *De Virtutibus in Communi* q. un, q. 1;

We saw in the introduction to this conference that man is becoming increasingly potent. By his scientific technology he may destroy the earth and abolish himself, as Lewis said.[25] But by applying the same technology he is equally able to improve the conditions of life and develop effective medical treatments for diseases, thus far deemed incurable. The dividing line between both is marked by practical wisdom.

De Caritate 2c; *Summa Theologiae,* I-II,107,4c; *Summa contra Gentiles* III,128.150.

[25] C.S. Lewis, *The aboltion of man* (Oxford: Oxford University Press, 1943), Ch. 3 "The abolition of man".